

## MARINE GRAPPLING HOOK

The present invention is, in general, a grappling hook and, in particular, a grappling hook for 5 marine use, manufactured in several different ways.

This application is a Continuation of U.S. Application No. 09/481,745, filed January 11, 2000.

### BACKGROUND OF THE INVENTION

10 A not uncommon problem when a personal boat approaches a desired moorage is that there may be no one present to receive a thrown mooring line. In such a situation, it is required somehow to take a mooring line from the boat to a slip, rock, or other fixed 15 object, and to secure it to a convenient fixture or obstruction. This is usually done by someone, grasping said line, either rowing a small boat, or leaping, to the desired spot. Such a feat requires strength and agility, and the results often include skinned shins, 20 sprained ankles, strained muscles and, not uncommonly, unexpected "dunkings".

Most grappling hooks of traditional design include a shank defining an axis, to one end of which is attached a flexible line, and from the other end a 21 multiplicity of "U"-shaped arms having grasping ends which radiate outwardly. When such a hook is thrown to

a slip or other intended site, one or more of the grasping ends will grip some part of the site, no matter how the hook is oriented about its axis. Its very real drawbacks include greater complexity to 5 manufacture, more space to store (always at a premium on a boat), and a danger of injury from one or more of the multiplicity of grasping ends.

The present invention enables a person on a boat, even an unaccompanied operator, to secure a line 10 at a desired moorage. It avoids the complexity of the traditional grappling hook, on the one hand and, on the other, either the necessity of having someone ashore to receive a line when thrown, or of the lone operator trying personally to fasten a line while manuevering 15 the boat.

This ease of mooring is made possible by the structure of the present invention. As the hook is drawn toward the boat across a fixture or obstruction (hereinafter defined) affixed to the surface of a slip, 20 walkway or other mooring structure toward the boat, it reaches a balance point (hereinafter defined) of the hook, whereupon gravity lifts the grasping end of the hook free of said surface and also rotates it about an axis (hereinafter defined), into position to engage 25 said fixture or obstruction until a regular mooring line can be properly attached.

The hook can be manufactured of a number of materials, in several different ways.

Such a hook will have other uses than the mooring of boats.

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#### BRIEF DESCRIPTION OF THE PRESENT INVENTION

The grappling hook of the present invention enables a person on a boat approaching a moorage to heave it, with a flexible line attached to a shank or 10 first end thereof, onto or over a dock, slip or other surface of the moorage. As the present invention is pulled toward the boat over the edge of the slip (or a bollard mounted along the edge of the slip), it reaches a point on its structure (hereinafter called the 15 balance point) where the weight of the first or shank end of it equals the weight of the second or grasping end of it. Any further movement of the present invention toward the boat will lift the grasping end free of the dock surface and cause it to rotate 20 downwards by gravity about the axis of the shank so that it will engage the dock edge, the bollard or other obstruction. It will also function the same way with a log, a rock, or even a limb of a tree overhanging a 25 desired anchorage. This action enables the boat to be pulled into a secure position at the moorage so regular mooring lines can be attached.

The hook of the present invention orients itself because of its shape, which resembles a stylized "J". A flexible line is attached to the shank or first end, which is the longer arm of the "J". The grasping 5 or second end, is the shorter arm of the "J". As the hook is drawn over an obstruction such as a bollard, the weight of the shank will lift the grasping or second end free of the dock surface, and the weight of that second end will rotate that end downward by 10 gravity so that it engages the obstruction, as hereinafter described in detail.

The hook of the present invention can be manufactured of any appropriate material, such as metal, fiberglass, or a tough plastic which can be 15 molded into a desired shape, or even a thermoplastic which can be shrunk over the flexible line preformed into a hook shape.

#### BRIEF DESCRIPTION OF THE DRAWINGS

20 FIG. 1 is an oblique view of the present invention, disclosing its essential features.

FIG. 2 is a representation, in cross-section, of a typical moorage slip as the hook of the present invention is being heaved onto it from an approaching 25 boat.

FIG. 3 is an oblique representation of a

portion of the walkway of the moorage slip of FIG. 2, with the present invention lying on it prior to being drawn toward its edge.

5 FIG. 4 is a view of the present invention as its shank is drawn over an obstruction on the edge of the slip and the grasping end rotates downward to engage the obstruction.

FIG. 5 is a view of the present invention as it securely engages the obstruction.

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#### DETAILED DESCRIPTION OF THE PRESENT INVENTION

FIG. 1 is an oblique general view of present invention 10, which discloses its essential features, as described in detail following.

15 Invention 10 is a grappling hook intended for, but not restricted to, marine use. It may be used anywhere that a person needs to attach a line at a position which is not easily accessible to said person. This is especially true of a boat approaching a moorage 20 where no one is present to catch a mooring line. Hook 10 is shaped like a stylized "J", where first or shank end 12, has a flexible line 14 attached to it, and second or grasping end 16 is for engaging a desired marine fixture or obstruction, as described in detail 25 below. Shank portion 20, which is between shank end 12

and first bend 18, defines an axis of rotation, as described in detail following, and also includes balance point 21, the importance of which is also described hereinafter.

5                   Hook structure 10, in its preferred form, defines a plane, with all elements from shank end 12 to grasping end 16 lying in the plane. This shape makes it easy to store, as contrasted with a traditional grappling hook, and requires little space.

10                  FIG. 2 discloses invention 10, with flexible line 14 attached to it, as it is heaved from boat 24 to slip 26, which may have affixed to it stringers, beams, or bollards 28a and 28b mounted along the edges, as shown.

15                  For simplicity of discussion and claiming, stringers, bollards, or beams 28a and 28b may be referred to below as obstruction 28. Also, rocks, overhanging limbs, and other appropriate fixed objects are intended by that term, both in the description and  
20                  the claims.

The depicted structure of slip 26 is intended to be illustrative, not determinative, of small boat moorages for which the present invention can most effectively be used.

25                  FIG. 3 depicts invention 10 lying on slip 26, having come to rest on its surface after having been

heaved there.

Balance point 21 is defined as the point where the weight of shank portion 20 will equal the weight of grasping portion 16. When balance point 21 5 is pulled beyond obstruction 28, the weight of shank portion 20 will lift grasping portion 16 from the surface of slip 26, and grasping portion 16 will rotate by gravity about axis 20 until it hangs downward, where it will be positioned to grasp obstruction 28 as 10 invention 10 is drawn further. Rotation will occur as long as the portion of hook 10 beyond bend 18 hangs free of the edge of obstruction 28.

FIG. 4 discloses the orientation of invention 10 after it is drawn by line 14 over obstruction 28 to 15 shank portion 20. The weight of shank portion 20 has lifted grasping portion 16 from the surface of slip 26, and grasping portion 16 has been rotated by gravity about axis 20 to hang downward, preparing it to engage obstruction 28.

20 FIG. 5 discloses invention 10 as it engages obstruction 28 as line 14 is drawn taut. Line 14 can be fastened around a cleat or other fastening device on craft 24, to keep it securely tied off to the desired moorage until a regular mooring line can be attached.

25 The hook of present invention 10 can be manufactured of any appropriate material which can be

formed into a fixed shape and cannot be easily deformed. Stainless steel and bronze are satisfactory, as well as other metals which have the necessary strength as well as resistance to deterioration by 5 moisture or salt water. A tough plastic or fiberglass which can be molded into the desired shape, or a strong thermoplastic which can be shrunk over a flexible line which has been preformed into the appropriate shape, are among other materials which might be used.

10 The terms and expressions which have been employed in the foregoing specification are used therein as terms of description and not of limitation, and there is no intention, in the use of such terms and expressions, of excluding equivalents of the features 15 shown and described, or portions thereof, it being recognized that the scope of the invention is defined and limited only by the claims which follow.

WHAT I CLAIM AS MY INVENTION IS: